

**CALIFORNIA ENERGY COMMISSION**1516 NINTH STREET  
SACRAMENTO, CA 95814-5512**NOTICE OF COMMITTEE CONCLUSIONS  
DUCT TAPE RULEMAKING PROCEEDING****Docket 02-BSTD-1****March 26, 2002****BACKGROUND**

In response to a petition filed by Tyco Adhesives and Shurtape Technologies, Inc. (Tyco), the Commission opened a rulemaking proceeding to consider possible repeal or amendment of requirements in the California Code of Regulations, Title 24, Part 6 (Building Energy Efficiency Standards) that allow the use of cloth back rubber adhesive duct tape for sealing ducts only if installed in combination with mastic. The current requirements were adopted by emergency pursuant to AB 970 in January, 2001. The regulations were subsequently readopted and made permanent in April, 2001. They went into effect for nonresidential buildings and some residences on June 1, 2001. They went into effect for the remaining residential buildings on January 1, 2002. In granting the petition, the Commission took no position on the substantive merits of Tyco's petition.

Since the mid-1990s the Commission has recognized the severe energy and peak demand problems caused by badly designed, sealed and installed heating, ventilation and air conditioning (HVAC) system ducts. In 1998 the Commission took a first step to address these problems in its performance standards by giving compliance credit for duct efficiency improvement, in particular for pressure-tested and field verified ducts that are sealed using long-lasting sealant products.

In 2000 the Legislature enacted AB 970, requiring the Commission to adopt new measures in the building energy efficiency standards to reduce peak electric load to respond to the State's electricity crisis. The Commission adopted several new requirements, among them are requirements that do not allow cloth-back rubber adhesive duct tape for the connecting of joints in HVAC system ducts unless such tape is used in combination with mastic. These are the requirements that Tyco has petitioned to repeal or amend, so that cloth back rubber adhesive duct tape alone can be used on duct joints, without the use of mastic

**EXPRESS TERMS AND COMMITTEE HEARING**

On February 22, 2002 the Commission opened a rulemaking proceeding to consider possible repeal or amendment of the requirements for cloth back rubber adhesive duct tape. To start the rulemaking the Commission released for consideration Express Terms (45 Day Language) to respond to concerns expressed by Tyco. The Express Terms would amend the requirements to allow the use of cloth back rubber adhesive duct tape without mastic for a limited time (until January 1, 2004) on only those duct connections where manufacturers recommend (on flex duct to fitting joints) in strict compliance with specific installation procedures. This allowance would only apply to field-fabricated duct systems in low-rise residential buildings.

The Commission stated the following in its Initial Statement of Reasons:

The Express Terms result from a specific proposal in a petition for rulemaking. One alternative is to not adopt the Express Terms. Other alternatives to the Express Terms may be proposed by participants in the rulemaking proceeding. At this point the Commission has not rejected alternatives to the Express Terms.

The Energy Efficiency Committee held a hearing on March 21, 2002 to receive public comment on the Express Terms.

## **SUMMARY OF KEY COMMENTS**

The following is a summary of the key comments that the Committee heard at the March 21, 2002 hearing.

California Building Officials (CALBO) opposes any changes to the Standards at this time. A major effort has been made to get building officials (approximately 550 jurisdictions statewide) and the building industry trained on the new Standards. There is no reason to change. The industry has already moved away from cloth tape or is in the process of doing so. The current options for compliance are fully satisfactory. The duct tape requirements are one of the easiest aspects of the Standards to enforce. Making a change to the Standards at this time would be very disruptive and would reduce the credibility of the Standards.

California Building Industry Association (CBIA) agrees with CALBO. Making a change to the current duct tape requirements undercuts a CBIA effort that has been going on since 1998 to train the largest California builders in how to do a good job of sealing ducts using long-lasting duct sealing materials. There is no problem with the industry being able to comply with the current Standards. If a more rigorous installation process was required to make it possible to use cloth back rubber adhesive duct tape in limited applications, builders would likely choose to use other sealing alternatives.

Insulation Contractors Association (ICA) supports CALBO's position. Insulation contractors get callbacks from customers not seeing an impact in their energy bills after an insulation upgrade. Often the problem turns out to be bad duct sealing. Bad duct sealing costs insulation contractors money. If the Commission's goal is to get high performance duct tape into the California market, then the way to do that is to keep the Standards the way they are.

Tyco and Shurtape support Commission adoption of the Express Terms. They agree with other stakeholders that the Express Terms should be improved to include other specific installation requirements for cloth back rubber adhesive duct tape. They will put installation instructions in shipping boxes for duct tape, will put an abbreviated set of instructions in the liner of the core of the tape roll, and will put a marking agreed to with the Commission, which says this tape is prohibited from use on other than flex duct to fitting joints, at intervals on the tape backing. They will work with the Commission to train building officials and contractors about installation practices that are acceptable to the Commission. They will work with the Commission and LBNL to develop a new test procedure that will insure that future duct tape products will last for the life of the home, accounting for hot temperatures and dirty conditions in California attics where ducts are installed.

Rottiers Sales Associates (Northern California distributor of Tyco products) are continuing to supply cloth back rubber adhesive duct tape to areas of Northern California outside of the Sacramento area where building officials are not enforcing the 2001 Standards requirement.

Proctor Engineering (California air conditioning systems expert and field researcher) urges the Commission to not allow the use of cloth back rubber adhesive duct tape. Sealing ducts is a very important energy savings and peak demand reduction action. Once construction of a house is finished, the joints where ducts leak are often inaccessible inside walls or under insulation in attics. If the joint fails, it will stay failed for the life of the house, wasting energy and the homeowner's or renter's money the whole time. He presented survey data that shows that a significant portion of contractors fail to follow manufacturer's installation instructions. He believes this can't be changed by a revision to the Standards. Installation instructions similar to the Express Terms currently are included in flex duct shipping boxes, but they don't get followed consistently. If the Commission wants to allow cloth tape, several key points would need to be added to the Express Terms to make the installation instructions acceptable.

Pacific Gas and Electric Company (PG&E) recommends that the Commission not change the Standards. Failed duct sealing means higher energy bills for their customers. Their programs have not allowed cloth tape since 1998. PG&E thinks that the installation instructions that are supplied with flex ducts are a good idea, but since they are printed on a small piece of paper in very small type, they could easily be disregarded by installers. If the Commission wanted to allow cloth tape, several points would need to be added to make the installation instructions in the Express Terms satisfactory. They think that rigorous installation instructions that are rigorously enforced would discourage the use of cloth tape. They agree that the use of cloth tape should be prohibited for collar to plenum joints.

Lawrence Berkeley National Laboratory (LBNL) recommends to not allow the use of cloth tape on collar to plenum joints and not allow the use of cloth tape if industry installation recommendations are not consistently followed. Their past testing shows that cloth back rubber adhesive duct tape is not a long-lasting duct sealing product. They recently have begun additional testing of duct tape on flex duct to collar joints. There are early signs of degradation of a sample, which was not installed to meet manufacturer's installation instructions.

C. A. Shroeder, Inc. (CASCO - factory-fabricated flex duct manufacturer) said that a building official cannot tell whether the flex duct to fitting joint is properly installed because it is covered up by the flex duct liner, which is then sealed. The building official will not take the joint apart to see if was correctly installed.

Underwriters Laboratories (UL) was not aware of a problem with cloth back rubber adhesive duct tape prior to the Commission's actions. UL does not have the resources to keep track of research, such as that in the building science literature over the past several years regarding the failure of duct tape. UL has limited ability to make changes to its requirements on its own authority. UL primarily gets its advice from manufacturers, but it is open to other input so long as it is submitted in a formal way following UL procedures. UL requires flex duct manufacturers to put installation requirements for sealing the flex duct to fitting joint in packing boxes. UL only endorses the use of duct tape on the flex duct to fitting joint when the installation is fully compliant with these instructions. UL has no mechanism to address problems with using duct tape on other duct system joints or failure of installers to follow the installation instructions. UL has not considered the possibility of requiring duct tape to be more durable so as to withstand installation problems that occur in the field.

Intertape Polymer Group (duct tape manufacturer) in a letter submitted to the Commission after the hearing urged the Commission not to adopt changes to the 2001 Standards. The letter stated, "... the CEC would be remiss in allowing duct tape to be continued to be used on an application that would waste energy and millions of dollars paid for that energy ... the pressure sensitive tape industry has come up with a solution to this problem, that is the UL 181 B-FX polypropylene backed tape with acrylic adhesive ... and the fact that this product already exists in the marketplace [indicates] there is no hardship created by enforcing this change."

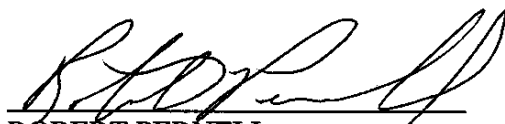
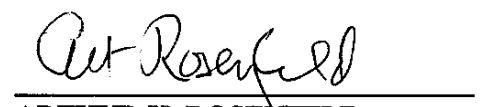
## **COMMITTEE FINDINGS**

Based on the comment received at the March 21, 2002 hearing and documents submitted to the docket, the Energy Efficiency Committee finds that adoption of the Express Terms is unnecessary and would be disruptive to the effective implementation of the 2001 Building Energy Efficiency Standards. The Express Terms would fail to insure that sealing duct systems with cloth back rubber adhesive duct tape would result in long-lasting sealing, and would fail to protect California from the potentially major energy and peak demand consequences of inadequately sealed ducts. The Committee believes that only long-lasting duct sealing products, which are resilient to the conditions in which they are installed and installation practices that fail to meet ideal recommendations, should be allowed for use in California. The Committee also is concerned with the admission of a Tyco business associate who knowingly has continued to supply cloth back rubber adhesive duct tape for installations that would not be in compliance with the 2001 Building Energy Efficiency Standards.

## **COMMITTEE RECOMMENDATION**

The Energy Efficiency Committee recommends that the Commission not adopt the Express Terms or any other changes to the Building Energy Efficiency Standards in response to the Tyco petition.

Signed:

  
**ROBERT PARNELL**  
Commissioner and Presiding Member  
Energy Efficiency Committee  
**ARTHUR H. ROSENFELD**  
Commissioner and Associate Member  
Energy Efficiency Committee